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## INFORMATION REPORT

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COUNTRY Germany/Czechoslovakia/U.S.S.R.

1C SUBJECT Freight Cars Adjustable from Standard  
to Broad Gauge and Vice Versa

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1. Railway freight cars that can be adjusted from standard to Soviet gauge and vice versa were built and used prior to the outbreak of the Russian-German war in 1941. The construction of such cars was naturally confined to the SU and Germany. The change from one gauge to the other was effected by a change of the wheel sets. This change required the following devices:

a. Adjustment devices on the car:

(1) On (German) standard gauge freight cars -

The distance between the traveling circles of the wheel sets (1,500 mm) and the axle bearing centers (1,956 mm) is dependent on the width of the track (1,435 mm). Over the axle bearing centers there are the springs which rest on the axle bearings and carry the longitudinal supports. The axle forks which hold the axle bearings and thus guide the wheel sets are riveted to the longitudinal supports. The wheels are standing within the axle forks when viewed from the front. If the freight car is to be adjusted to Soviet gauge, the distance between the traveling circles of the wheel sets is increased from 1,500 mm to 1,570 mm, and the distance between the front surfaces of both wheel sets from 1,360 mm to 1,440 mm. The wheel disk has to be shifted by about 40 mm toward the outside. Such an adjustable wheel set, the so-called "Umsatzradsatz fuer deutsche Wagen auf Breitspur" can be attached to German freight cars if the flanges of the pressed axle forks are not too high, the Soviet wheel set being able to

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move freely beneath the German car body. Although the axle bearing remains unchanged, the brake rod has to be re-adjusted. This is done as follows: Each shaft stump of the brake triangle shaft is lengthened by about 40 mm toward the outside, with the outer brake hanger levers also shifted by about 40 mm toward the outside. The brake blocks can then be moved on the shaft stumps toward the outside or the inside. By a forked insert, which is released onto the shaft stumps, the brake blocks are kept fixed in one or the other position (see Annex 2). The car is adjusted to Soviet gauge.

## (2) On Soviet gauge freight cars -

To adjust the Soviet freight cars to standard gauge track, a wheel set is required that can retain the distance between the axle bearing centers of 2,144 mm. The distance between the wheels, however, must be the 1,360 mm required for standard gauge track. The brake system of the Soviet freight cars must also be adjustable, as are the German cars.

A number of Soviet freight cars that are provided for trips abroad are equipped in such a way that, when the freight car is running on Soviet wheel sets, the standard gauge wheel sets are carried attached to the truck frame. At the transfer sites the latter wheel sets are exchanged for the Soviet sets which then are carried attached instead of the standard sets.

## b. Adjusting facilities at the transfer sites:

The following equipment should be available:

(3) Adjustable wheel sets of Soviet gauge for the transfer from standard to Soviet gauge (see Annex 1).

(4) Adjustable wheel sets of standard gauge for the transfer from Soviet to standard gauge (see Annex 1).

At the transfer site the standard gauge track (1,435 mm) is widened to Soviet gauge (1,524 mm) via a 1,508-mm transition section ~~the~~ the length of a freight car. The freight car body is hoisted over the transition section while the standard gauge wheel sets are rolling on a guard rail to a parking track via a switch, and the Soviet gauge wheel sets arrive from a Soviet gauge branch track. The change of axles is sometimes done by means of cranes. The brake blocks are adjusted as described above (see Annex 2).

## c. Identification mark on adjustable freight cars -

In Germany: The letter "R" is added to the type designation, as for example: Omr

Gr

Rr etc.

Special adjustable cars, such as refrigerator cars and tank cars, are distinguished from non-adjustable cars of the same type by means of white-painted buffer boxes.

2. As Czechoslovakia now directly borders the SU and maintains direct rail traffic with her, Czechoslovakia started the construction of railway freight cars which can be adjusted from standard to Soviet gauge track.

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a. At a conference held at the Ceskomoravska Kolben Danek (CKD) Plant in July 1948, the problem of the construction of adjustable freight cars, including the production process, was thoroughly discussed and it was agreed to construct from now on all Czech freight cars as adjustable cars with the exception of those which are earmarked for exportation to standard-gauge-track countries. The design discussed provides for a hurried switch from standard to Soviet gauge through the quick exchange of the wheel axles (axle with two pressed on wheels). The distance between the wheel axle bearings is large enough to house the Soviet gauge axle. The wheel axles, though they are the same length for both gauges, have the wheels fixed at different places on the axle as is shown in Annex 3.

It was calculated that an eight-man crew could adjust a two-axle standard gauge car to Soviet gauge track and vice versa in 6 minutes by exchanging the wheel axles with the help of two lifting jacks.

b. Adjusting operations on Czech freight cars --

The two spring holders (abutments of the leaf spring system holding the axle bearings) are movable in a slot attached to the car body (see Annex 4). The slot is provided with an inner stop for standard gauge and an outer stop for Soviet gauge, the latter being a little farther advanced toward the outside than the actual Soviet gauge position, so that there is some leeway when the axles are set.

The change from standard to Soviet gauge is made as follows: The freight car end which is to be re-adjusted is lifted by means of a jack or crane until there is no pressure on the springs. The fastening screws of the spring holder, which firmly connect the spring holder in the slot with the car body, are unscrewed. The spring holders (four holders for each wheel axle) are then moved to the outer stop, thus releasing the two wheel axle ends from their bearings (equipped with oil boxes). The fixed axle (with two pressed-on wheels) rolls off on the track. The truck, however, is equipped with a third rail which can be used for Soviet gauge axle. On this Soviet gauge track the Soviet gauge axle is then moved underneath the car body and set into the bearings etc. When the same operation has been carried out at the other end of the car, the car may continue its trip on Soviet gauge track.

Source did not personally watch such an operation but he knows that a [redacted] [redacted]

[redacted] saw an 8-man crew which adjusted a loaded (!) two-axle freight car by means of a crane (not a jack !) to the respective gauge in about 20 to 25 minutes.

c. Types of freight cars used by the Czech State Railroads Open cars:

- U1 Light coal car for the conveyance of coal and piece goods empty weight: 7 tons; load capacity: 8 to 10 tons.
- U Coal car for the same purposes; empty weight: 8 tons; load capacity: 10 to 12 tons.
- Vut High-wall coal car, particularly for the conveyance of coals; empty weight: 9 to 10 tons; load capacity: 20 to 25 tons.

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- Vutr Same as "Vut" but adjustable to Soviet gauge.
- Vsr Latest type coal car with sheet metal walls and adjustable to Soviet gauge, empty weight: 10 tons.
- Us All-metal coal car, can be tilted; empty weight: 12 to 15 tons; load capacity: 30 to 50 tons.
- Usa Same as "Us" but equipped with four axles; empty weight: 13 to 18 tons; load capacity: 40 to 70 tons.
- Vd, Vtd For the conveyance of logs and pit timber; empty weight: 9 to 10 tons; load capacity: 20 to 25 tons.
- Vdr For the conveyance of lumber; adjustable to Soviet gauge.

## Closed cars:

- Zl Empty weight: 8 tons; load capacity: 10 to 12 tons.
- Z, Zc, Zc Empty weight: 10 tons; load capacity: 15 to 17 tons.
- Zt, Ztz Empty weight: 10 tons; load capacity: 17 to 20 tons. Ztz type is of British make.
- Zsr Empty weight: 10 tons; load capacity: 20 to 28 tons; adjustable to Soviet gauge.
- Zd, Zdv Empty weight: 10 to 15 tons; load capacity: 15 to 17 tons. For the conveyance of wood shaving and other goods that are of large volume but low weight.
- G, G1 For the conveyance of beams; weight of a two-car set: 18 to 20 tons; load capacity: 50 tons.

## Special cars:

- R Two-axle tank car; empty weight: 10 to 15 tons; load capacity: 20 to 30 tons.
- Rc Four-axle tank car; empty weight: 10 to 17 tons; load capacity: 30 to 50 tons.
- P, Po, Poz Flat cars with 2 to 16 axles.

Note: The transfer from standard to Soviet gauge is made by exchanging the wheel sets. If the letter "x" is added to the type designation, the car is adjustable.

The reports show that the switch from standard to Soviet gauge and vice versa is also effected by the exchange of the wheel sets on the new type Czech cars. It is believed that the Czech car braking system resembles that of the German adjustable cars. The assumption that the switch in gauge is effected by the adjustment of the individual wheels may have been due to the observation of the adjusting and re-aligning of the brake blocks. As the described shifting of the axle bearing (annex 4) is unnecessary and time-consuming, it probably does not take place. This project assumes that the Czechs generally followed the German design for adjustable cars that is known to both the Soviets and the Czechs.

It is considered possible that the exchange of the wheel sets and the adjusting of the brake blocks is made over a pit similar to a greasing pit.

## Production and utilization of adjustable freight cars.

a. Germany: No production at present. Available cars are used in the Soviet and Eastern zones; utilization of the adjusting devices on the cars has never been observed; all cars are now loaded at the trans-shipping stations; no gauge adjusting.

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facilities for freight cars have been seen at the transfer stations; whereabouts of the Soviet gauge wheel sets, which were formerly available, are unknown.

b. Poland: No production of adjustable freight cars; some stock of captured German cars is probably available.

c. Czechoslovakia: Data on the production capacity are not available, except for the following information which was obtained from statistical records and press reports:

1948 plan figure:	15,240 standard railroad car units
Revised 1948 plan figure:	13,010 standard railroad car units

Production from January to November 1948:	9,600 standard railroad car units.
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Note:

1 freight car corresponds to 1 standard car unit  
1 passenger coach corresponds to 10 standard car units  
1 motor rail car corresponds to 12 standard car units.

This information indicates that the number of adjustable freight cars in Czechoslovakia may be still low. It can be expected that only adjustable freight cars will be produced in the future.

Gauge adjusting facilities at the CIGRA transfer station have not yet been seen. So far, only individual cars were adjusted.

d. Hungary: No production of adjustable freight cars. There is a workshop at the ZAHONY transfer station where Soviet gauge wheel sets are installed on locomotives and railroad cars to be sent to the SU as reparation deliveries. Proper gauge adjusting facilities do not exist.

e. Rumania: No pertinent information.

f. SU: No information; the use of adjustable freight cars has not yet been reported from there; so far, the freight was trans-shipped. Gauge adjusting facilities were not yet sighted along the Soviet border.

- 4 Annexes: (1) Adjustable Wheel Sets for Normal Gauge Cars to Be Operated on Soviet Gauge  
(2) Cross Section A-B  
(3) Gauge-adjusting Device on Czech Freight Cars  
(4) Gauge-adjusting Device on Czech Freight Cars

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